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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

FLUIDIGM CORPORATION, a Delaware corporation; and FLUIDIGM CANADA INC., a foreign corporation,

Plaintiffs,

IONPATH, INC., a Delaware corporation,

Defendant.

Case No. 3:19-cv-05639-WHA

DEFENDANT IONPATH'S RESPONSIVE CLAIM CONSTRUCTION BRIEF

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I. INTRODUCTION

Fluidigm's claim constructions attempt to implausibly stretch a 2004 patent specification that described a way to analyze the chemical contents of biological cells as they flowed one by one through a detection device to now cover complex imaging technology that was not developed and commercialized until a decade later. To get there, Fluidigm's constructions consistently resist giving meaning to the claim language as drafted, instead seeking to pluck words or phrases out of the claims and construe them as stand-alone terms divorced from the context of the claim language, specification, and file history. In so doing, Fluidigm contorts its claim constructions—and the patents themselves—to carve around (by excluding from the limitation proposed for construction) or side-step (by leaving undefined) the very claim language that the named inventors elected for the claims or that Fluidigm was forced to add during prosecution to obtain its patents at all. On the flip side, IONpath's construction ask the Court to straightforwardly construe the claims consistent with the understanding a person of ordinary skill in the art ("PHOSITA") would have had of the claims in the context of the specification, file history, and what the inventors actually purport to have invented.

II. LEGAL STANDARDS

Claim terms are to be given their "ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). "*Phillips* makes clear that '[t]he claims . . . do not stand alone. Rather, they are part of a fully integrated written instrument, consisting principally of a specification that concludes with claims.'" *Trs. of Columbia Univ. v. Symantec Corp.*, 811 F.3d 1359, 1362–63 (Fed. Cir. 2016). For that reason, "claim terms are construed in light of the specification and prosecution history, not in isolation." *UltimatePointer, L.L.C. v. Nintendo Co.*, 816 F.3d 816, 824 (Fed. Cir. 2016). Consistent with this, "the specification may define claim terms by implication such that the meaning may be found in or ascertained by a reading of the patent documents." *Symantec*, 811 F.3d at 1364.

The prosecution history is also part of the "intrinsic evidence" and "provides evidence of how the PTO and the inventor understood the patent." *Philips*, 415 F.3d at 1317. Courts further rely on extrinsic evidence in the form of expert testimony "such as to provide background on the technology

at issue, to explain how an invention works, to ensure that the court's understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field." *Id.* at 1318.

III. THE PATENTS-IN-SUIT

The '386 and '698 patents describe a specific technique for the sequential detection and analysis of single cells, i.e. the analysis of a single first cell followed by the analysis of a single second cell, via spectrometry. The problems in the prior art that the specification purports to address are two-fold. One, the prior light-based technique "flow cytometry" analyzed single cells but lacked sensitivity. Second, high sensitivity detection techniques, such as those used to measure trace elements in water samples, were (purportedly) not configured to provide analysis on an individual, single cell level. The solution that the patents claim to provide is the combination of these two techniques: bringing together flow cytometry's ability to analyze individual single cells with the high sensitivity of a mass spectrometer. The patents refer to this device as an "elemental flow cytometer," stating that "[i]n one broad aspect, the present invention provides an apparatus for ***introducing particles sequentially and analyzing the particles*** (for example, single particles such as single cells or single beads), by spectrometry." Ex. 1[1] ('386 patent) at 2:55–58;[2] *see also id.* at 1:33–36 ("The invention features apparatus and methods for sequentially analyzing particles, for example single cells or single beads, by spectrometry. ***In particular, the invention provides elemental-flow cytometers***."). The patents consistently disclose and describe the overall scheme of sequential analysis of single cells as they move, cell-by-cell, through the device. *See* '386 patent at 26:58–59 ("the ***entire cell*** and its contents were vaporized, atomized and ionized."); 12:24–25 ("It is desirable that the entire particle introduced to the ICP be vaporized"); 28:41–43 ("This implies that the entire (permeabilized) cells and their contents were vaporized, atomized and ionized in the ICP-MS").

Consistent with the specification, the independent claims of the '386 and '698 patents specifically require "sequentially analyzing single cells [in a sample] by mass spectrometry" and

[1] All exhibits are to the Decl. of Joseph Taylor Gooch in Support of IONpath's Claim Construction Brief.

[2] Emphasis added and citations omitted throughout, unless otherwise noted. Citations to the '386 specification are used herein for brevity; citations to the '698 patent are the same unless noted. The '698 specification has a different abstract and cosmetic changes but is otherwise identical.

require the detection and analysis of a "first single cell" and a "second single cell." The claims require "vaporizing, atomizing, and ionizing multiple elemental tags ***from a single first cell*** of the plurality of tagged cells" and then a ***single second cell***, and to require that "the transient signal associated with the first cell and the transient signal associated with the second cell are ***detected sequentially***." These limitations are essential features of an elemental flow cytometer configured to analyze single cells, on a cell-by-cell basis, as they flow through the system—the purported invention described and claimed in the patents-in-suit.

IV. THE CLAIM LIMITATIONS AT ISSUE

A. "vaporiz[ing/e], atomiz[ing/e], and ioniz[ing/e] multiple elemental tags"

Limitations for Construction	Fluidigm's Proposed Construction	IONpath's Proposed Construction
"vaporizing, atomizing, and ionizing multiple elemental tags" ('386 claim 1) *"vaporize, atomize, and ionize multiple elemental tags" ('698 claim 1)*	generating ionized atomic components of multiple elemental tags from a solid or liquid state of a sample	to convert the elemental tags to a gas by heating, separate the resulting gas into atomic constituents, and positively or negatively charge those atomic constituents
"vaporizing, atomizing, and ionizing" ('386 claim 1/'698 claim 1)	generating ionized atomic components from a solid or liquid state of a sample	*see above*

The parties have three independent disputes. First is whether the claim language "vaporizing, atomizing, and ionizing" requires each of vaporization, atomization, and ionization (IONpath's position) or whether any process that starts with a solid or liquid sample and results in ions falls within the scope of the claims (Fluidigm's position). Second is whether the steps of vaporization, atomization, and ionization must be performed in order. Third is whether vaporization requires heating (IONpath's position) or includes any conversion from a solid or liquid state (Fluidigm's position).

1. The Claims Require Each of "Vaporiz[ing/e], Atomiz[ing/e], and Ioniz[ing/e]" Tags

"Claim construction must begin with the words of the claims themselves." *See Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 457 F.3d 1293, 1301 (Fed. Cir. 2006). Here, the words of the claims themselves require each of (1) vaporizing, (2) atomizing, and (3) ionizing of the multiple elemental tags, and the equivalent usage in the '698 patent.

Consistent with the plain language of the claims, "vaporize, atomize, and ionize" is used

reliably throughout the specification to refer to discrete steps. In describing the "preferred embodiment," the specification explains that "the sample is promptly vaporized, atomized and ionized as it flows through the plasma." '386 patent at 13:30–32. This use of the description "***as it flows through***" confirms the plain reading that the three claimed stages occur sequentially and separately. In yet another embodiment, the specification explains that "vaporization, atomization and ionization and/or excitation can occur ***in different devices and at different times***," giving the example of using a "graphite furnace for vaporization in combination with ICP for atomization and ionization and/or excitation." '386 patent at 13:7–11. The specification acknowledges that these are separate steps while recognizing the possibility of hypothetical (unclaimed) embodiments in which there is vaporization and atomization, but not ionization; there is vaporization and ionization, but not atomization; there is ionization and atomization, but not vaporization; and vaporization can be of the "entire particle" but ionization and atomization may only be "partial." *Id*. at 3:4–15 ("vaporization followed by ionization directly"); 12:24–30 ("It is desirable that the entire particle introduced to the ICP be vaporized, and at least partially atomized and ionized"); 19:14–20 ("vaporized, atomized and (optionally, but usually naturally under optimum conditions) ionized"). In fact, other than Fluidigm's misreading of the specification's reference to glow discharge devices (addressed below), Fluidigm has not identified a single reference where vaporizing, atomizing, and ionizing are not discrete requirements.

Despite the clear language of the claim and consistent disclosure in the specification, Fluidigm's proposed construction omits the "vaporize" requirement entirely, and instead rewrites the claims to require merely "[g]enerating ionized atomic components." In other words, Fluidigm's construction includes the claim terms "ionize" and "atomize," but leaves "vaporize" nowhere to be found. In so doing, Fluidigm's construction improperly expands the scope of the claim to cover ***any*** method of generating ions from a solid or a liquid. It is simply incorrect that all paths from solid to ion include vaporization. Declaration of Nicholas Winograd, Ph.D. Regarding Claim Construction ("Winograd Decl."), ¶¶ 147–52. But more to the point, if that is what the applicants had intended to claim, they would have claimed it. They chose to claim "vaporizing, atomizing, and ionizing." Fluidigm should not be permitted to redline the claim now. *See In re Power Integrations, Inc.*, 884 F.3d 1370, 1376 (Fed. Cir. 2018) (rejecting construction that "renders claim language meaningless");

Merck & Co., Inc. v. Teva Pharm. USA, Inc., 395 F.3d 1364, 1372 (Fed. Cir. 2005).

2. The Claims Require "Vaporiz[ing/e], Atomiz[ing/e] and Ioniz[ing/e]" In Order

Claims are construed to require order when "the steps of a method claim actually recite an order" and when order is required implicitly such as "if the language of a claimed step refers to the completed results of the prior step." *Kaneka Corp. v. Xiamen Kingdomway Grp. Co.*, 790 F.3d 1298, 1306 (Fed. Cir. 2015). While it is true that claims that do not "explicitly recite or implicitly require" ordering should not be construed as such, *Koninklijke Philips N.V. v. Zoll Med. Corp.*, 656 F. App'x 504, 514 (Fed. Cir. 2016), ordering is required where "the sequential nature of the claim steps is apparent from the plain meaning of the claim language and nothing in the written description suggests otherwise." *Mantech Envtl. Corp. v. Hudson Envtl. Servs., Inc.*, 152 F.3d 1368, 1376 (Fed. Cir. 1998); *see also Mformation Techs., Inc. v. Research in Motion Ltd.*, 764 F.3d 1392, 1399 (Fed. Cir. 2014).

A PHOSITA reading the claim would have understood that "vaporization, atomization, and ionization" requires those steps to be carried out in that sequence. Winograd Decl., ¶¶ 154–65. This particular phrasing is commonly used in systems, such as those described in the patent, where an injected sample is "vaporized" then "atomized" and finally "ionized" as it moves through the system. *Id*. As explained above, the specification explains that, in the ICP system of the preferred embodiment and *all* twelve examples,[3] "the sample is promptly vaporized, atomized and ionized as it flows through the plasma." ('386 patent at 13:31–32); *see also* '386 patent at Abstract ("Particles or element tags associated with particles can be ***vaporized, atomized, and ionized*** . . . ."); *id*. at 4:5–6 ("a device to vaporize, atomize and ionize the particles").[4]

Despite this, Fluidigm's contends that the three steps "can occur simultaneously." Dkt. 109 at 10, leaning heavily (indeed, exclusively) on the reference to "glow discharge" to rewrite the claim. There are multiple problems with this. *First*, none of the disclosed embodiments or examples contemplates simultaneous "vaporization, atomization and ionization." Winograd Decl., ¶¶ 160-65.

[3] While the specification lists examples 1 through 13, it omits example 6.

[4] Even in the unclaimed embodiment of OES where "atomization may not be necessary," the overall sequence is nevertheless maintained. '386 patent at 3:11-15 ("Thus, for example, 'vaporize, atomize and ionize' should be understood to mean vaporize, atomize and ionize (for mass spectrometry) or excite (either or both atoms and ions) for OES."); Winograd Decl., ¶ 142.

Second, once a sample is reduced to individual atoms, there is ***nothing*** to vaporize. *Id*. *Third,* even under Fluidigm's theory, ionization occurs separately and subsequently to the atomizing in a glow discharge device. Dkt. 109 at 10. A PHOSITA would have understood that to the extent it was possible to use a glow discharge device ***with the sequential introduction of single cells*** (as claimed), those techniques required a separate and heat-based vaporization step in order to create species capable of being atomized and ionized by a glow discharge plasma. Winograd Decl., ¶¶ 176-85.

3. A PHOSITA Would Understand "Vaporiz[ing/e]" To Define A Specific Process That Uses Heat

Specifically as to the first "vaporize" step, a PHOSITA would have understood that, in the context of these claims and patents, the term requires the heat-based transition of a bulk sample from a solid or liquid to a gas. The specification provides four examples of what may be used to vaporize, atomize, and ionize the sample: "***graphite furnace***, ***glow discharge*** and ***capacitively coupled plasma***," and where "***Inductively Coupled Plasma Mass Spectrometry*** (ICP-MS) is a preferred means." '386 patent at 13:2–6; 13:12–13. Each of these expressly includes or otherwise implicates the use of thermal heat to vaporize the sample. Winograd Decl., ¶¶ 166–71; 176-85.

In addition, and contrary to Fluidigm's apparent position that "any suitable devices may be used to generate ions" (Dkt. 109 at 9), a PHOSITA would understand that "vaporize" does not include merely ***any*** conversion of a solid or liquid. For instance, Fluidigm's expert Dr. Kelly points to examples where glow discharge mass spectrometry is carried out on conductive, metallic samples (which Fluidigm describes as "sputtering") to suggest that the claims can cover any process that ionizes atomic components.[5] But in "sputtering" or "desorption," which is how an ion gun removes material from the surface of a target sample, individual atoms or molecules are knocked loose from

[5] While Fluidigm has identified a couple of publications where "sputtering" is conflated with "vaporization" in a generalized background discussion of "ion sources," *see, e.g.*, Dkt. 109-15 at 4, those references cannot overcome the understanding a PHOSITA would have the claims in the context. *Phillips*, 415 F.3d at 1315 (Fed. Cir. 2005) ("the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term."). That is especially true because Fluidigm's extrinsic evidence is not specific to the analysis of single cells or particles, as required by the patents, and Fluidigm fails to explain how these other techniques relate to the purported inventions, let alone the claims.

the surface by physical collisions ***without vaporization*** (i.e., without relying upon a temperature increase). Winograd Decl., ¶¶ 26–28, 174. In any case, what Fluidigm never convincingly explains is why the fact that there might be *other* ways to ionize atomic components (including without vaporization) means that the particular way claimed should be set aside. Ultimately, whatever lay or non-specific meaning Fluidigm seeks to ascribe to "vaporize," the law requires that this term to be read in the context of the patent, as it would be understood by a PHOSITA. The context provided here is two-fold. First, the specification provides four separate, heat-based examples (and no non-heat based examples). Second, "vaporize" does not sit alone in the claim, but is recited along with steps to "atomize" and "ionize." These three steps together exclude non-heat routes to ionized particles. Winograd Decl., ¶ 166-75. In this context, the claim cannot be read to cover any route from a sample to ions as Fluidigm's construction implies.

4. Fluidigm's Reliance on Glow Discharge Is Unpersuasive

Perhaps recognizing that the language of its claims and the specification expose one of the fundamental defects in its infringement case, Fluidigm's opening brief improperly attempts to broaden the scope of the claims by (1) (correctly) noting that that the specification lists a "glow discharge device" as a means to vaporize, atomize, and ionize, but (2) (incorrectly) assuming that ***all*** glow discharge devices operate without the use of heat, and then (3) (incorrectly) implying that the patents' references to "glow discharge" must mean that "vaporize" does not require heat.

Broken syllogism aside, Fluidigm's argument ignores the reality that, while there are ***some*** glow discharge devices that do not use heat, there are ***many*** glow discharge techniques that do rely on a separate heating step. Winograd Decl., ¶¶ 176-85. For example, the intrinsic record includes a patent publication cited by the PTO during prosecution of a patent in the same family, U.S. Patent Pub. 2002/0003210, which describes a particle beam glow discharge prior art patent, configured to analyze airborne particles. Ex. 5 (U.S. 2002/0003210 to Marcus). This reference, identified on the face of the '386 and '698 patents, describes the difficulties in applying glow discharge devices to particle systems, and overcomes the problem by using a chamber with "***heated*** walls (200 to 1000° C.)" to "flash ***vaporize***" the sampled particles, prior to introduction to the glow discharge itself. *Id.* at [0035]. As another example, the Bogaerts reference on which Fluidigm and Dr. Kelly rely, identifies multiple

glow discharge devices that rely on with thermal processes such as laser ablation and a "graphite furnace" to liberate particles from a sample. Winograd Decl., ¶ 183. In other words, the references to glow discharge devices are fully in line with the claims' requirement of vaporizing, atomizing and ionizing, just as IONpath proposes. On the flip side, there are other glow discharge devices that do not atomize or that only ionize (i.e., do not vaporize or atomize). Winograd Decl., ¶ 182. Thus, if Fluidigm were right that specification's references to "glow discharge devices" should be used to broaden the claim, there would be no reason to stop at writing vaporizing out of the claim—the same faulty logic would require ionizing and atomizing to also be stricken.

B. "A First Device to Vaporize, Atomize, And Ionize . . ."

Claim Limitation	Fluidigm's Proposed Construction[6]	IONpath's Proposed Construction
a first device to vaporize, atomize, and ionize multiple elemental tags from a single first cell of the plurality of tagged cells and multiple elemental tags from a single second cell of the plurality of tagged cells ('698 claim 1)	"*a first device*": plain and ordinary meaning. "*vaporize, atomize and ionize*": generate ionized atomic components from a solid or liquid state of a sample	This term is governed by § 112(6) ***Function***: "to vaporize, atomize, and ionize multiple elemental tags from a single first cell of the plurality of tagged cells and multiple elemental tags from a single second cell of the plurality of tagged cells" ***Structure***: "a glow discharge, graphite furnace, capacitively coupled plasma device, or inductively coupled plasma (ICP) device, (6:59–7:2; 13:1–7), with an input configured to receive the output of a cell or particle injector systems in use for flow cytometry, including sheath flow injection systems (11:50–61), and equivalents thereof"

The parties have two disputes. First, whether the claim limitation should be construed as a means-plus-function limitation under 35 § 112 ¶ 6 (IONpath's position), or whether the limitations "first device" and "vaporize, atomize, and ionize" should each receive their own, non-112 ¶ 6

[6] Fluidigm stated in the alternative that should § 112 ¶ 6 apply, the "function would be as-recited in the claim" and the structure would "include one or more of the following: glow discharge, graphite furnace, capacitively coupled plasma devices, inductively coupled plasma devices, other suitable devices, and equivalents thereof, including microwave induced plasma, DC-glow discharge, rf-glow discharge, spark source, laser ablation/ionization, ion-beam (including, but not limited to, techniques that generate secondary ions using an ion beam), electrospray, capacitive microwave plasma, and direct current plasma." Dkt. 86-1 at 6.

construction (Fluidigm's position). Second, should the claim properly be treated as § 112 ¶ 6, what is the proper corresponding structure in the specification. The parties agree that under § 112 ¶ 6, the function is the claim as it is written.

1. This Is A Means-Plus-Function Limitation

Patentees may "express a claim limitation by reciting a function to be performed rather than by reciting structure for performing that function, while placing specific constraints on how such a limitation is to be construed, namely, by restricting the scope of coverage to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347 (Fed. Cir. 2015). The standard applied in determining whether § 112 ¶ 6 applies is "whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure." *Id.* at 1348. Where a claim recites "a function to be performed rather than by reciting structure for performing that function," the scope of coverage is limited only to the "structure, materials, or acts described in the specification." *Id.* at 1347. While there is a presumption that a limitation that does not use the word "means" is not governed by § 112, ¶ 6, there is no "heightened evidentiary showing" to overcome the presumption. *Id.* at 1349. Rather, the essential inquiry is "whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure." *Id.* at 1348; *see also Grecia v. Samsung Elecs. Am., Inc.*, 780 F. App'x 912, 914–15 (Fed. Cir. 2019). That is, any claim that "fails to recite sufficiently definite structure" or else recites function without reciting sufficient structure for performing that function should nevertheless be treated as a means-plus-function claim. *Williamson*, 792 F.3d at 1351.

Here, the "first device" limitation recites purely functional language. The limitation begins with the nonce word "***device***"—which identifies neither structure nor function—and is effectively equivalent here to the limitation "means." *See Mass. Inst. of Tech. & Elecs. For Imaging, Inc. v. Abacus Software*, 462 F.3d 1344, 1354 (Fed. Cir. 2006) ("generic terms" such as "'means' . . . and '***device***,' typically do not connote sufficiently definite structure.").[7] The claim continues by identifying

[7] In fact, the original claims recited "a means to vaporize, atomize, and ionize . . ." Ex. 4 ('698 File History), 12/21/2018 Claims. The claims were amended to recite a "first device," but no structure was

the function of the "device," that is, "***to*** vaporize, atomize, and ionize." Each of these words provides a functional requirement and does not describe any structure that would perform the requirement. Winograd Decl., ¶¶ 194-98. For example, a "device to vaporize" only identifies the function of the device (i.e., vaporization). This is further shown by the specification's identification of "means to vaporize, atomize and ionize" where corresponding structures ***are*** provided. Ex. 2 ('698 patent) at 6:59. And yet none of these corresponding structures appear in the independent claims of the '698 patent itself. The remainder of the claim element does not rescue the functional "device to vaporize, atomize, and ionize " with any structural description, but instead only identifies the target: "multiple elemental tags from a single first cell of the plurality of tagged cells."

While Fluidigm argues that this term should not be subject to means-plus-function construction, its brief fails to identify any structural language ***in the claim*** itself. Fluidigm does not even attempt to argue that the term "first device to vaporize, atomize, and ionize" had "achieved recognition as a noun denoting structure" or was "used in common parlance or by persons of skill in the pertinent art to designate structure." *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1359–61 (Fed. Cir. 2004). Nor does Fluidigm identify in its construction a plain meaning for the nonce word "device," or any explanation for how "vaporization," "atomization," and "ionization" are anything more than the functions of an unnamed structure. Rather, Fluidigm merely states that the claim provides "sufficient detail for a POSIA at the time to understand what common and ordinary devices fall within its scope." Dkt. 109 at 17; Dkt. 109-2, ¶¶ 90–91 (arguing that a POSIA would know that the structures in the specification "are the types of common devices that might be used as the 'first device' and 'second device' as set out in the claims"). But § 112 requires the disclosure of ***structure***—and not merely functional "detail"—***in the claims***. Fluidigm's own case proves the point: *MTD Products* held that "a mechanical control assembly . . ." ***was a means plus function term*** where "the rest of the 'claim language of the disputed phrase is primarily, but not entirely, functional.'" Dkt 109 at 17 (citing *MTD Prods. Inc. v. Iancu*, 933 F.3d 1336, 1343 (Fed. Cir. 2019)).

added. *Id.* at 8/22/2019 Notice of Allowance.

2. The Corresponding Structure of the Specification

If § 112 ¶ 6 does apply, construction proceeds by first identifying the claimed function (which is undisputed here), and then identifying the "corresponding structure" in the specification. *Williamson*, 792 F.3d at 1352. Because the claim limitation is governed by § 112 ¶ 6, the specification must provide the corresponding structure. "[S]tructure disclosed in the specification is corresponding structure only if the specification or prosecution history ***clearly links*** or associates that structure to the function recited in the claim." *Sony Corp. v. Iancu*, 924 F.3d 1235, 1239 (Fed. Cir. 2019). Here, the specification clearly identifies the structure that corresponds to the "vaporize, atomize, and ionize," stating:

> "***The means to vaporize, atomize and ionize*** the single particles may include ***glow discharge, graphite furnace, and capacitively coupled plasma devices,*** or other suitable devices. Preferably, the means to vaporize, atomize and ionize the single particle includes an ***inductively coupled plasma (ICP) device*** . . . ."

'698 patent at 6:59–7:2; *see also id*. at 13:1–20. Given the clear linking that mirrors the claim language, a PHOSITA would have understood that the four enumerated structures that follow are the corresponding structure for the first device: (1) a glow discharge, (2) a graphite furnace, (3) a capacitively coupled plasma device, and (4) an inductively coupled plasma device. Winograd Decl., ¶¶ 199-202.

The phrase "other suitable devices," on the other hand, is ***not*** properly disclosed corresponding structure, as Fluidigm urges. For one, a disclosure of "other suitable devices" is not a disclosure of a structure at all, but merely a placeholder. Moreover, "disclosure must be of 'adequate' corresponding structure to ***achieve*** the claimed function," and the non-specific listing of "other suitable devices" would not be found adequate by a person of skill in the art.[8] *Williamson*, 792 F.3d at 1352; Winograd Decl., ¶¶ 200; 208; *see also Xilinx, Inc. v. Altera Corp.*, No. 93-20409 SW, 1998 WL 822956, at *2 (N.D. Cal. July 30, 1998) (citing *Fonar Corp. v. Gen. Elec. Co.*, 107 F.3d 1543, 1551 (Fed. Cir. 1997)) ("A specification that merely mentions the possibility of alternative structures without specifically identifying them is not sufficient to expand the scope of the claim beyond the example used.");

[8] The presence of "glow discharge" in the specification does not encompass ***all*** glow discharge devices, but glow discharge devices that vaporize, atomize, and ionize. *See* Section IV.A.4, *supra*.

Winograd Decl., ¶ 200.

While the above "means to vaporize, atomize and ionize" identifies the corresponding structure for vaporizing, atomizing, and ionizing, the recited function ***also*** requires that it be performed on the multiple elemental tags "from a ***single*** [first/second] cell of the plurality of tagged cells." Accordingly, a PHOSITA would look to the specification for corresponding structure that would achieve the use of a "single [first/second] cell." There, the specification clearly identifies "***Means for Introducing Particles Sequentially***" as a section heading. '698 patent at 11:50. This section states:

> The sample introduction system 102 can comprise several devices that are currently in use with other flow cytometry sample introduction systems. For example, there currently exist several ***cell or particle injector 171 systems in use for flow cytometry, including various formats of sheath flow injection***.

Id. at 11:51–56. Thus, the corresponding structure that enables the sequential analysis of cells is ***a cell or particle injector systems in use for flow cytometry, including sheath flow injection systems*** and equivalents thereof. Winograd Decl., ¶¶ 203-04. This corresponding structure is required because it is the structure that permits the analysis "from a single first cell" and "from a single second cell" as claimed. Winograd Decl., ¶¶ 203. Without it, the "first device" could not practice the claimed function.

In response, Fluidigm argues that the "sample introduction system" is a "separate device" that should not be considered as part of this claim construction. Dkt. 109 at 18. But Fluidigm does not dispute that the scope of the claim's function is the language of the claim—i.e., that the claim does not merely recite a "means for vaporizing, atomizing, and ionizing," but must be capable of doing so "***from a single first cell of the plurality of tagged cells***." The proper construction thus must include the corresponding enabling structure. It is not, as Fluidigm alleges, an "unrelated structure."[9]

3. Fluidigm's Recitation Of "Equivalents" In Its Construction Is Improper

Fluidigm's proposed construction goes on to list a broad swath of supposed "other suitable devices, and equivalents thereof." Fluidigm's argument fails twice. ***First***, the identification of equivalents is a question of fact for an infringement analysis—not one for claim construction. *See*

[9] Fluidigm's citation to *Karl Storz Endoscopy-Am., Inc. v. Stryker Corp.*, No. C 09-00355 WHA, 2011 WL 1659867, at *12 (N.D. Cal. May 3, 2011) is misplaced. There, the Court warned against "inferring ***unstated*** claim requirements" from limited embodiments in the specification. Here, the functionality is ***recited*** in the claim.

Pressure Prods. Med. Supplies, Inc. v. Greatbatch Ltd., 599 F.3d 1308, 1317 (Fed. Cir. 2010); *Faroudja Labs., Inc. v. Dwin Elecs., Inc.*, 76 F. Supp. 2d 999, 1010 n.4 (N.D. Cal. 1999). Thus, Fluidigm's laundry list of equivalents is improper at this stage. ***Second***, on the merits (which are not proper at this stage) many of Fluidigm's proposed "equivalents" in fact have substantial differences from those disclosed. *See Ergo Licensing, LLC v. CareFusion 303, Inc.*, 673 F.3d 1361, 1364 (Fed. Cir. 2012) ("a patentee is ***only*** entitled to corresponding structure . . . described in the specification and equivalents thereof, not ***any*** device capable of performing the function."). IONpath will address these distinctions in detail in its forthcoming 'showdown' briefing.

C. "A Second Device to Detect . . ."

Claim Limitation	Fluidigm's Proposed Construction[10]	IONpath's Proposed Construction
"a second device to detect, by mass spectrometry, lanthanides and/or noble metals of the single first cell by detecting a transient signal of the multiple vaporized, atomized, and ionized elemental tags of the single first cell, and lanthanides and/or noble metals of the single second cell by detecting a transient signal of the multiple vaporized, atomized, and ionized elemental tags of the single second cell, wherein the transient signal associated with the single first cell and the transient signal associated with the single second cell are detected sequentially"('698 claim 1)	"*a second device*": plain and ordinary meaning. "lanthanides": any element having atomic numbers 57–71. "*noble metals*": any of several metallic elements, the electrochemical potential of which is much more positive than the potential of the standard hydrogen electrode, therefore, an element that resists oxidation. Examples include palladium, silver, iridium, platinum and gold). "*transient signal*": the detectable ions generated for a limited duration of time. "*vaporizing, atomizing and ionizing*": generating ionized atomic components from a solid or liquid state of a sample. "*detected sequentially*": observed at separate times.	This limitation is governed by § 112(6) *Function:* to detect, by mass spectrometry, lanthanides and/or noble metals of the single first cell by detecting a transient signal of the multiple vaporized, atomized, and ionized elemental tags of the single first cell, and lanthanides and/or noble metals of the single second cell by detecting a transient signal of the multiple vaporized, atomized, and ionized elemental tags of the single second cell, wherein the transient signal associated with the single first cell and the transient signal associated with the single second cell are detected sequentially *Structure:* a quadrupole, magnetic sector with array detector, 3D Ion Trap or Linear Ion Trap mass spectrometer, a time of flight mass spectrometer (7:15–20; 17:65–18:3), and equivalents thereof.

The parties have two disputes. First is whether the claim limitation should be construed as a

[10] Fluidigm has stated in the alternative that the structures "include one or more of the following: simultaneous or sequential mass analyzers, including time-of flight, array-detector magnetic sector, 3D ion trap, linear ion trap, and quadrupole devices, and equivalents thereof." Dkt. 86-1 at 9.

means-plus-function limitation under 35 § 112 ¶ 6 (IONpath's position), or whether various snippets of the claim should receive their own non-112 ¶ 6 construction (Fluidigm's position). The second dispute, should the claim properly be treated as § 112 ¶ 6, is the proper corresponding structure.

For the same reasons set forth above for the "first device for . . ." claim limitation, the "second device" is also governed by § 112 ¶ 6. Here, a "device to detect . . ." is purely functional language. The qualifier "by mass spectrometry" is also functional language. It does not identify a structure. It only identifies the technique of "mass spectrome***try***," a function that can be accomplished through multiple technologies and using multiple different types of structures. Fluidigm offers no evidence or argument to the contrary. Instead, Fluidigm improperly turns to the enumerated examples ***in the specification*** as evidence that the claims themselves provide structure. Dkt. 109 at 19. This proves the point. The remainder of the claim limitation describes the functionality—identifying what is being detected, that it is detected for the first cell and the second cell, and that the detection occurs "sequentially." Winograd Decl., ¶¶ 213–20. None of these functional limitations provide any corresponding structure.

Should the Court find this element is a means-plus-function limitation, the parties agree on the claimed function. The parties also agree that the patent expressly discloses as corresponding structure those terms included in IONpath's proposed construction, which come (as corresponding structure must) straight from the specification:

> The mass spectrometer can be any mass spectrometer. For example, it can be a ***quadrupole, magnetic sector with array detector, 3D Ion Trap or Linear Ion Trap mass spectrometer***. Preferably it is ***a time of flight mass spectrometer*** (TOF MS). TOF MS is a simultaneous analyzer. It is able to register all masses of interest in one particle simultaneously.

'698 patent at 7:15–20. These enumerated and linked structures "and equivalents thereof" are claimed under § 112(6). Nothing more. Yet Fluidigm creates an additional, broader category of all "simultaneous or sequential mass analyzers," and reframes the enumerated structures ***as examples***. The specification never mentions "simultaneous or sequential mass analyzers," and neither Fluidigm nor Dr. Kelly identify any disclosure linking "simultaneous or sequential mass analyzers" to the claimed function. Fluidigm's attempt to broaden the corresponding structure beyond the recited structures violates the "quid pro quo" provided to the applicant under § 112 ¶ 6. *B. Braun Med., Inc.*

v. Abbott Labs., 124 F.3d 1419, 1424 (Fed. Cir. 1997).

D. "detect[ing]" Limitations

Claim Limitation	Fluidigm's Proposed Construction	IONpath's Proposed Construction
"detect . . . lanthanides and/or noble metals of the single first cell . . . , and lanthanides and/or noble metals of the single second cell . . . ." ('698 claim 1)	• "*detect*": plain and ordinary meaning. • "*lanthanides*": lanthanides include any element having atomic numbers 57–71. • "*noble metals* ": noble metals include any of several metallic elements, the electrochemical potential of which is much more positive than the potential of the standard hydrogen electrode, therefore, an element that resists oxidation. Examples include palladium, silver, iridium, platinum and gold.	individually discerning on a cell-by-cell basis . . . the lanthanides and/or noble metals that make up the first cell . . . individually discerning on a cell-by-cell basis . . . the lanthanides and/or noble metals that make up the second cell
"detecting . . . the elemental composition of the [first/second] cell" ('386 claim 1)	analyzing elements or isotopes of the elemental tags bound to analyte in or on the [first/second] cell, by mass spectrometry	individually discerning on a cell-by-cell basis . . . the elements that make up the [first/second] cell

There are two disputes here. First, the parties dispute whether the "detect . . ." limitation of the '698 patent should be construed at all. Fluidigm resists construction, seeking instead to chop up the claim requirement into discrete pieces, presumably so that it can try to read each piece out of context of the whole. Second, while the parties agree that the "detecting . . ." limitation of the '386 patent should be construed, they disagree on its scope. IONpath's proposal is that it should be construed in the context of the claims and consistent with the corresponding limitation in the '698 patent. Fluidigm's proposed construction refuses to give meaning to the claims' requirement that the purpose of the claimed invention is to detect the composition of "the first cell" and of "the second cell." Ultimately, the key issue in both disputes is whether "detecting" limitations should be read in the context of the claim's requirement that what is being detected is the composition of "the first cell" and "the second cell" (IONpath's proposal) or whether they should be plucked out and given some unspecified "plain and ordinary" meaning divorced from the context of the claim and specification (Fluidigm's proposal).

1. "detect . . . lanthanides and/or noble metals of the single first cell . . . , and lanthanides and/or noble metals of the single second cell . . . ." ('698)

The plain language of the claim is consistent with IONpath's proposed construction requiring

"individually discerning on a cell-by-cell basis." Winograd Decl., ¶¶ 226–27. This is clear from the structure of the claim itself, which recites (1) "vaporizing, atomizing, and ionizing . . . tags from a *single* first cell," (2) then "detecting . . . *the* first cell," (3) then "vaporizing, atomizing, and ionizing . . . tags from a *single* second cell," (4) then "detecting . . . *the* second cell." Thus, the four-part structure of the claims themselves compels the conclusion that each of the "detecting" steps is "on a cell-by-cell basis." IONpath's construction is further reinforced by the fact that the claim recites "detecting . . . ***the*** elemental composition of ***the*** [first/second] cell," which requires that the elemental composition of the ***entire*** "single first cell" (which is the antecedent basis for "the first cell") be detected in the first detecting step and the elemental composition of the ***entire*** single second cell (which is the antecedent basis for "the second cell") must be detected in the second detecting step.[11] *See, e.g.*, *Kruse Tech. P'ship v. Volkswagen AG*, 544 F. App'x 943, 949–50 (Fed. Cir. 2013) (citing cases) (construing "the combustion" to mean the entire combustion from the "beginning to the end" and holding it could not be read as "a portion of the combustion"); *Harris Corp. v. Fed. Exp. Corp*., 502 F. App'x 957, 963 (Fed. Cir. 2013) (nonprecedential) (construing "transmitting the accumulated, stored generated aircraft data from the ground data link unit" to require all of the data and rejecting the argument that "the" could be construed to mean "a subset" where the claim "lacks any indication that some subset of the accumulated data should be transmitted, and if so what that subset should be").

The specification and the prosecution history reinforce this understanding. For instance, the ***first*** sentence of the "Summary of the Invention" makes clear: "In one broad aspect, ***the present invention*** provides an apparatus for introducing particles sequentially and analyzing the particles (for example, single particles such as single cells or single beads), by spectrometry." '386 patent at 2:55–59. "The specification goes on to explain that they are introduced "***cell-by-cell*** or bead-by-bead" and "preferably adapted for discrete event analysis." *Id*. at 6:22–23; *see also id*. at 24:63–67 (describing a sample introduction rate in "***cells/second***"); '386 patent at 3:42–44 ("In another broad aspect, the invention provides a method for ***analyzing particles that have been introduced sequentially, such as***

[11] The '698 claims are similarly structured to require (1) "vaporize, atomize, and ionize . . . tags from a *single* first cell", (2) and "tags from a *single* second cell,," then (3) "detecting . . . the *single* first cell", (4) and "the *single* second cell." The '698 patent also requires "detect . . . lanthanides and/or noble metals ***of the*** single first cell," and "lanthanides and/or noble metals ***of the*** single second cell."

single cells or single beads, by spectrometry."); Winograd Decl., ¶¶ 228-35. None of the twelve examples in the specification suggest that the detection is on anything other than cell-by-cell basis; to the contrary, each recitation of detecting or analyzing a "single cell" or on a "cell-by-cell" basis supports the conclusion that the "detect . . . ." limitation requires cell-by-cell detection of "the first cell" and then "the second cell." *See also* Winograd Decl., ¶ 234.

Attempting to avoid the import of its patents' own claims and specification, Fluidigm seeks to dismiss IONpath's construction as made from "whole cloth." Dkt. 109 at 16. In fact, IONpath's proposed construction ("individually discerning elemental composition on a cell-by-cell basis") comes directly from the applicants' explanation to the Patent Office as to why the "first cell" and "second cell" were important to patentability.[12] Winograd Decl., ¶¶ 57–110; 236–42; . During the prosecution of the '386 patent, the application was rejected in view of U.S. 2002/0086441 to Baranov. Ex. 6 (U.S. 2002/0086441 (hereinafter "Baranov441")). Baranov441, which is admitted as prior art in the patents-in-suit ('386 patent at 2:46–51) and shares several named inventors, describes two methods of sample introduction using an ICP: "as a spray of droplets (liquid sample) or flow of particles (laser ablation of solid surfaces)." Baranov441 at [0102]. Baranov441 disclosed the use of "microablation" to "distinguish cancerous cells from normal cells on histological section of biopsy samples using element-tagged antibodies," which requires the rasterization across a sample tissue surface, where data is collected for each sample spot or pixel. Winograd Decl., ¶¶ 236–42.

Faced with rejection in view of Baranov441, the applicant amended the patent's independent claim to add the "first" and "second" cell limitations:

> detecting ~~analyzing~~ the elemental composition of the ~~single~~ first cell by detecting a transient signal of the multiple vaporized, atomized, and ionized elemental tags of the ~~single~~ first cell;

They simultaneously argued that the laser ablation and "spray of droplets" techniques in Baranov441

[12] Although these statements and amendments are enough to give rise to disclaimer, an applicant's statements with respect to the meaning of a claim amendment can demonstrate meaning even in the absence of a disclaimer. *Personalized Media Commc'ns, LLC v. Apple Inc.*, 952 F.3d 1336, 1340 (Fed. Cir. 2020) ("an applicant's amendment accompanied by explanatory remarks can define a claim term by demonstrating what the applicant meant by the amendment.").

"relate to detecting a sample in bulk without ***individually discerning elemental composition on a cell-by-cell basis***." Ex. 3 ('386 File History), 9/18/2018 Amendment/Response to Office Action at 2, 8. In so doing, the applicant made clear that detection methods that did not analyze "cell-by-cell," such as bulk detection methods that analyze tissue samples by laser ablation, were not captured by the claim. Winograd Decl. ¶¶ 237-43.

The prosecution's emphasis on detection "cell-by-cell" is also consistent with the description of the "means for introducing particles sequentially" discussed in the patent. The specification repeatedly refers to its purported invention as an elemental flow cytometer that includes the sequential introduction of cells and particles in combination with a mass spectrometer. *See, e.g.*, '386 patent at 6:7–8 ("The elemental flow cytometer of the present invention provides for the identification and quantitative analysis of particles that have been introduced sequentially into a device . . . ."). The specification provides twelve examples of cell tagging and elemental flow cytometry and ***no*** non-flow cytometry examples. Winograd Decl., ¶¶ 228–34; *see, e.g.*, *Bondyopadhyay v. United States*, 748 F. App'x 301, 307–08 (Fed. Cir. 2018) (where the "specification repeatedly and uniformly describes the 'present invention' as being greater than a hemisphere," and where "none of the figures in the specification depict an embodiment with a surface area less than a hemisphere," the claim construction of "geodesic sphere" was properly construed as "at least a hemisphere."); *Regents of Univ. of Minn. v. AGA Med. Corp.*, 717 F.3d 929, 936 (Fed. Cir. 2013) ("When a patent[] describes the features of the present invention as a whole, this description limits the scope of the invention.").

Fluidigm does not propose a construction for this limitation, and instead argues that certain words should be construed in isolation. But Fluidigm still has not—in response to IONpath's repeated requests during the meet and confer process or in its opening brief—explained what the purported plain meaning of "detect" and "detecting" are. Dkt. 109 at 12. Nor has Fluidigm proposed ***any*** construction of the "first cell" and "second cell" requirements in the claim. It merely ports those terms into its proposed construction, improperly side-stepping the parties' substantive dispute. *See O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1361 (Fed. Cir. 2008); *Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1318 (Fed. Cir. 2016).

2. "detecting . . . . the elemental composition of the [first/second] cell" ('386)

These patents are from the same family, and "unless otherwise compelled, that the same claim term in the same patent or related patents carries the same construed meaning." *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1334 (Fed. Cir. 2003). IONpath's construction is consistent with its construction proposed for the '698 patent. Fluidigm's is not. And yet Fluidigm provides no explanation for its inconsistency. Fluidigm's construction again merely repeats the "the first cell" and "the second cell" limitations without engaging on what those limitations actually mean. Fluidigm cannot duck the meaning of its claim to keep its case alive. The dispute is joined. The Court must resolve it.

E. "Sequentially" Limitations

Claim Limitation	Fluidigm's Proposed Construction	IONpath's Proposed Construction
"sequentially analyzing single cells in a sample" ('698 claim 1) / "sequentially analyzing single cells" ('386 claim 1)	analyzing single cells in a sample separately, not at the same time	individually discerning elemental composition on a cell-by-cell basis
detected sequentially ('386 claim 1; '698 claim 1)	observed at separate times	*see above*

The dispute between the parties is whether the "sequentially analyzing . . ." limitations should be construed to require the sequential analysis of single cells (i.e., cell-by-cell) as claimed and described (IONpath) or whether "sequentially" should be understood simply as "separately" or "at separate times" without regard to the context in which the claim limitation arises (Fluidigm).

At the outset, there can be no real debate the preamble is limiting. Fluidigm has proposed a construction for the limitation and thus concedes it is limiting. Despite this, in its infringement contentions and its embodying products contentions (compelled by the Court), Fluidigm has taken the position that the preambles are not limiting. Ex. 7 (Fluidigm Supp. Resp. to Interrog. No. 8, Appx A1) at 1; Ex. 8 (Fluidigm Supp. Inf. Conts., Appx A) at 1. However, in attempting to distinguish the prior art, Fluidigm has taken the position that the preambles are limiting. Ex. 9 (Fluidigm Supp. Resp. to Interrog. No. 11) at 13. Fluidigm of course cannot have it both ways. In any case, because individual words in this construction—"sequential," "analyzing," and "single cell"—appear in other non-preamble elements, they should be construed consistently throughout the claim. *Microprocessor Enhancement Corp. v. Texas Instruments Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008) ("a single claim

term should be construed consistently with its appearance in other places in the same claim or in other claims of the same patent"). Indeed, "a preamble limits the [claimed] invention if it recites essential structure or steps, or if it is 'necessary to give life, meaning, and vitality' to the claim." *Eaton Corp. v. Rockwell Int'l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003). Here, "sequential" and "single cell" are "patentably significant" and—critically—do not "merely extolling benefits or features of the claimed invention" *Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 809 (Fed. Cir. 2002).

On the substance, the parties' dispute fundamentally centers on whether "sequentially analyzing single cells" requires that each cell be detected or analyzed sequentially, or whether, as Fluidigm's suggests, it does not matter whether you analyze single cells in sequence as long as some detection or analysis for the first cell happens "not at the same time" as some detection or analysis of the second cell. Put differently, IONpath's proposed construction gives meaning to the claim requirement that the "sequential analy[sis]" is of "single cells," while Fluidigm's proposed construction would simply replace the word "sequence" with "not at the same time," and cover a situation in which any part of one cell is analyzed at a different time than any part of another cell, even where each "single cell" is not analyzed as a whole let alone in sequence with another "single cell."

IONpath's proposed construction flows directly from the claim language requiring "sequentially analyzing single cells"—detecting and analyzing single cells one by one. Winograd Decl., ¶¶ 257–59. IONpath's proposed construction maintains this understanding by requiring a sequential, "cell-by-cell" identification of the elemental composition of the claim. This construction is consistent with the specification and the prosecution for those same reasons as the "detecting . . ." limitations discussed above. *See* Section IV.D above.

In contrast, Fluidigm's construction essentially replaces "sequential" with "not at the same time." This interpretation is inconsistent with the claim's use of the term "sequential." For instance, final element of the claim includes the word "sequential" in relation to detecting a transient signal associated with the first and second cells. This would have confirmed to a PHOSITA that "sequential" requires not just at different times, but in a sequence. Winograd Decl., ¶ 258. The construction is also consistent with the context of the patent, and the intrinsic record's description of "cell-by-cell" analysis, as described above. *See* Section IV.D.

Finally, as discussed above, Fluidigm's construction yet again dodges the question of what a "single cell" is. Instead of addressing the "the first cell"/ "the second cell" requirements of the claim, Fluidigm's briefing overreaches by arguing that IONpath's construction requires that detection of "every element that might be present in or on a cell." This is a strawman. IONpath's construction of "the elements ***that make up*** the first cell" (the language used by the patent applicants) does not include the implicit or explicit "every element" requirement Fluidigm reads in. Winograd Decl., ¶ 247; 264.

F. "Transient" Limitations

Claim Limitation	Fluidigm's Proposed Construction	IONpath's Proposed Construction
detecting . . . wherein the transient signal associated with the first cell and the transient signal associated with the second cell are detected sequentially ('386 claim 1) *detecting . . . wherein the transient signal associated with the single first cell and the transient signal associated with the single second cell are detected sequentially ('698 patent claim 1)*	• "detecting": plain and ordinary meaning. • "transient signal": the detectable ions generated for a limited duration of time. • "detected sequentially": observed at separate times.	detecting the individual signal of an individual cell event for the first cell, and detecting the individual signal of an individual cell event for the second cell
transient signal ('386 claim 1; '698 claim 1)	the detectable ions generated for a limited duration of time	*See above*

The parties agree that both "detecting . . ." limitations here should be given the same construction. There are two disputes between the parties. First, the parties dispute which claim limitations should be construed. IONpath submits that the limitation "detecting . . . wherein the transient signal associated with the first [single] cell and the transient signal associated with the second [single] cell are detected sequentially" provides the necessary context for a proper interpretation of the claim. Fluidigm takes the position that the short phrase "transient signal" should be construed. Second, the parties disagree as to the proper construction: IONpath provides the jury with the understanding that a "transient" relates to an "individual cell event." Fluidigm's construction is primarily limited to an out of context definition of "transient" as "limited duration of time."

At the outset, Fluidigm proposes construing "transient signal" alone. A PHOSITA would not have read this limitation outside of the context of the words that surround it. Winograd Decl., ¶ 250, 272. As with the other limitations Fluidigm's attempt to lift terms out of the claim and construe them

in isolation, should be rejected. The general meaning of a "transient" is not the proper inquiry here.

When the claim language is considered in the appropriate context, IONpath's proposed construction of "detecting . . ." is consistent with the plain meaning of the limitation as it would have been understood by a PHOSITA in the context of the asserted claims. ***First***, for the same reasons discussed above in Section IV.D regarding the "detecting . . ." limitations, the "the first cell" and "the second cell" of this claim element require that the signals be "individual." That is, the context of the claims and the patent as a whole require that cells be introduced and detected as discrete targets for analysis, and to be done so on a sequential, cell-by-cell basis. That is the very essence of the claimed invention. ***Second***, the specification identifies a "transient" in relation to a "single cell event" of detection. The specification explains that:

> "If the ***transient produced by the single cell event*** is of the order of 100–300 microseconds (as reported by Olesik for monodispersed 3–65 micrometer particles), an equivalent average count rate of (0.7–2)x10^9 is achieved (with peak current about twice that).

'386 patent at 25:56–60. Thus, when a single cell moves through the flow cytometer, is vaporized, atomized, and ionized by the ICP torch (or an equivalent), the detection of the signal from that single cell is a "single cell event." *See, e.g.*, '386 patent at 18:8–10 ("the transient signals from a single particle may last for a period in the range 20 to 200 microseconds"). Accordingly, a "transient signal associated with the first cell" is not merely detecting ***any*** signal of a short duration (as Fluidigm's construction would suggest)—it refers specifically to detecting the transient of the ***single cell*** system.

Notably, each one of these examples of a "transient" from the intrinsic record links the transient to the analysis of a single cell. Fluidigm's expert appears to agree with this position. Dr. Kelly's declaration first cites to the prosecution history statement by the applicants that the prior art was "silent . . . as [to] how to analyze multiple elemental tags ***from a single cell*** before the transient signal disappears." Dkt. 109-2, ¶ 129. Fluidigm's expert then goes on to state that if IONpath's understanding of an "individual signal" in its construction is "those detectable ions of limited duration ***associated with each cell***, then IONpath's construction would seem to be consistent with [IONpath's proposed claim limitation]. Dkt. 109-2, ¶ 133. Dr. Kelly correctly ascertains that IONpath's position is that the "detecting . . ." term requires detecting a "cell event" associated with each cell. Despite this apparent

understanding, and even agreement, Fluidigm does not offer ***any*** construction for the "detecting . . ." term, instead proposing only that "transient signal" and "detected sequentially" should be construed alone and out of the context of their surrounding words.

G. "Lanthanide Or Noble Metal" and "Lanthanides And/Or Noble Metals"

Claim Limitation	Fluidigm's Proposed Construction	IONpath's Proposed Construction
"lanthanide or noble metal" ('386 claim 1; '698 claim 1) *"lanthanides and/or noble metals" ('698 claim 1)*	lanthanides include any element having atomic numbers 57–71 noble metals include any of several metallic elements, the electrochemical potential of which is much more positive than the potential of the standard hydrogen electrode, therefore, an element that resists oxidation. Examples include palladium, silver, iridium, platinum and gold	element, isotope, ion, and/or composition comprising element with atomic number 57–71, ruthenium, rhodium, palladium, silver, indium, hafnium, rhenium, iridium, platinum, gold, ruthenium, copper, osmium, mercury, or nickel

The parties agree on the meaning of "lanthanides" (elements with atomic number 57–71) and that "noble metals" are those that metallic elements that resist oxidation, including palladium, silver, iridium, platinum, and gold. The dispute is what else falls within the scope of "noble metals."

Fluidigm and its expert Dr. Kelly concede that a PHOSITA would look to Baranov441 for guidance on the scope of the limitation. Baranov441 refers to a "noble metal" as a metallic element where "the electrochemical potential of which is much more positive than the potential of the standard hydrogen electrode**, *therefore, an element that resists oxidation***. Examples include palladium, silver, iridium, platinum and gold." Baranov441 at [0075]. This disclosure would confirm to a person of ordinary skill in the art the scope of noble metals is more expansive the examples listed and is tied to whether metals oxidize readily in air. Winograd Decl., ¶¶ 278–80. Consistent with that, a person of ordinary skill would understand that this list would reasonably be: ruthenium, rhodium, palladium, silver, indium, hafnium, rhenium, iridium, platinum, gold, ruthenium, copper, osmium, mercury, and nickel, as each of these metallic elements do not readily oxidize in air. Winograd Decl., ¶ 281.

Fluidigm does not dispute the disclosure in Baranov441. Instead Fluidigm and Dr. Kelly selectively exclude particular metals that do not readily oxidize in air, including indium, nickel, and copper.[13] Dkt. 109-2, ¶ 137; Dkt. 109 at 13. Moreover, Fluidigm's proposal attempts to limit tags to

[13] Dr. Kelly's only support for excluding copper (and indium and nickel) is a single clause from the

"elements," to the exclusion of "element[s], isotope[s], ion[s], and/or composition[s]" as IONpath's construction proposes. In excluding isotopes, Fluidigm's construction is inconsistent with the parties' ***agreed*** construction of "elemental tag" as an "element ***or an isotope*** of an element." In excluding ions, Fluidigm's construction is inconsistent with the disclosure that the tags are ionized. '386 patent at 13:3–4. In excluding compositions, Fluidigm's construction is inconsistent with the disclosure that more than one element or isotope may be used together. *Id*. at 10:19–21.[14]

H. "distinct isotope"

Claim Limitation	Fluidigm's Proposed Construction	IONpath's Proposed Construction
"distinct isotope" ('386 claim 9; '698 claim 6)	an isotope of an element that has a distinguishable mass from other isotopes, of the same or other element, used as tags in that sample	Plain and ordinary meaning; no construction necessary. *To the extent the Court finds that this term requires construction, IONpath states that it's plain and ordinary meaning is:* "an isotope of an element that has a distinguishable mass from other isotopes."

Substantively, IONpath does not dispute the portion of Fluidigm's contention that construes a "distinct isotope" as "an isotope of an element that has a distinguishable mass from other isotopes." It is the remainder of Fluidigm's proposed construction—the additional requirement ". . . of the same or other element, used as tags in that sample"—that is at issue. During the parties' meet and confer, IONpath repeatedly asked Fluidigm to explain what this additional language was intended to convey. Fluidigm refused to answer. *See* Dkt 86 at n.1; *see also* Patent L.R. 4-7.

Now, Fluidigm explains that "[d]istinct isotopes can comprise isotopes of the same or other elements, as long as the masses of the isotopes used to tag each antibody are distinguishable from one another to allow for separate identification by mass spectrometry," citing paragraphs 144–145 of the declaration of Dr. Kelly. Paragraph 145 finally explains that Dr. Kelly's (and presumably Fluidigm's) "understanding is that the elemental tags used to tag different antibodies in the '386 and '698 patents

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specification that he reads to suggest that elemental tags should not be common in biological systems. Dkt. 109-2, ¶ 140 (citing '386 patent at 10:7-9). The patents do not ***require*** this. '386 patent at 9:60-61 (elements are "expected ***in most instances*** to be uncommon"); Winograd Decl., ¶ 284.

[14] Even Dr. Kelly agrees that isotopes and ions should be included. Dkt. 109-2, ¶¶ 139-40. His only dispute appears to be his uncertainty as to the scope of "composition." *Id*. The scope is just what the patent describes: a composition of more than one element or isotope.

can comprise isotopes of the same or other elements, as long as the masses of the isotopes used to tag each antibody are distinguishable from one another to allow for separate identification thereof by mass spectrometry." Dkt. 109-2, ¶ 145. Assuming that is all that Fluidigm's construction is intended to convey, it is in line with the plain and ordinary meaning and there is no dispute here. If Fluidigm propose some additional or alternative meaning, it has failed to articulate—let alone support—it.

I. "pretreating the multiple vaporized, atomized, and ionized elemental tags of the first cell occurs in a vacuum"

Claim Limitation	Fluidigm's Proposed Construction	IONpath's Proposed Construction
pretreating the multiple vaporized, atomized, and ionized elemental tags of the first cell occurs in a vacuum ('386 claim 18)	conditioning a group of element tag ions in a vacuum and transporting to the mass spectrometer	plain and ordinary meaning; no construction necessary.

IONpath does not dispute the first part of Fluidigm's construction. Where the parties part ways is the inclusion of additional requirement of ". . . transporting to the mass spectrometer." During the parties' meet and confer, IONpath repeatedly asked Fluidigm to explain the basis for this language and Fluidigm was unable to do. *See* Dkt. 86 at n.1; *see also* Patent L.R. 4-7. In fact, there is none.

The specification describes an "ion pretreatment device" and states that it may include in different embodiments "a vacuum interface; a high-pass mass filter downstream of the vacuum interface; and a gas filled ion cooler cell downstream of the vacuum interface." '386 patent at 15:32–36. It further explains that the device "acts, inter alia, as an ***interface*** between atmospheric conditions in the vaporizer/atomizer/ionizer and the vacuum in the mass spectrometer." *Id*. at 7:3–5. Neither Fluidigm nor Dr. Kelly have identified any evidence that would also require that "pretreating . . . in a vacuum" also requires transport to a mass spectrometer. The closest they come is a citation to a single sentence in the specification that notes that "The ion pretreatment system is adapted to transport ions generated by the ionization system to the mass analyzer." Dkt. 109-2, ¶ 149. But Dr. Kelly never explains why this single sentence requires transport ***to the mass spectrometer***. *Id.* Nor could he. In the very next column, the patent makes clear: "[t]he ***ion pretreatment device may be provided as a part of the mass spectrometer***, preferably upstream of the mass analyzer section thereof." '386 patent at 4:11–14.

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